Machine Learning (OML) User Manual

Oracle FLEXCUBE Universal Banking

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Table of Contents

1 Preface 4
1.1 Introduction 4
1.2 Audience 4
1.3 Organization 4
2 Overview of Machine Learning 5
2.1 An Introduction 5
3 Model Building Routine 6
3.1 Contextual Information 6
3.2 ML Use Case Definition 6
3.2.1 Model Metrics Tab 7
3.2.2 Correlation Button 8
3.2.3 Cost Matrix Button 9
3.3 ML Training and Scoring 10

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1 Preface

1.1 Introduction

This manual is designed to assist you in getting acquainted with the Oracle FLEXCUBE Machine Learning framework.

It has detailed stepwise instructions to help you build Oracle FLEXCUBE Machine Learning models and process their execution.

The manual also outlines how to access and interpret the model outcomes for augmented decision-making.

1.2 Audience

This manual is intended for the following Users/ User Roles:

Role	Function
Branch Managers	Overall Branch Perspective
Account Managers/ Relationship Managers	Customer Relationship Management
Head Office Managers	Overall Bank Perspective
FLEXCUBE Admin / IT support	Application Administration and Support

1.3 Organization

This manual is organized as per the following chapters

Chapter	Description
Overview of Machine Learning	It introduces the Machine Learning context and specifically the Oracle FLEXCUBE framework.
Model Building Routine	This chapter contains instructions on how to build Machine Learning Models using historical Oracle FLEXCUBE data.

2 Overview of Machine Learning

2.1 An Introduction

Machine Learning is heavily dependent on historical data to build models and use the models to predict outcomes for better decision-making.

The following points encompass contextual information to help you get familiarized with the subject:

1. Machine learning model building is dependent on historical data spread across dates.
2. The model building will take time. It may range from a couple of minutes to hours, sometimes days, depending on the algorithm's complexity.
3. The model has to be built for each bank. It cannot be pre-shipped and also it can not be re-used across banks.
4. The model is only as good as the data used to build it.
5. Built Models are valid only for the data used to build the model.

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3 Model Building Routine

Oracle FLEXCUBE Machine learning framework is a newer feature that is being introduced as part of FCUBS. The machine learning framework is being designed to work in tandem with Oracle FLEXCUBE based on Production database or Projection database for the data generation routine.

The following are Use Case Types:

- Regression
- Classification

3.1 Contextual Information

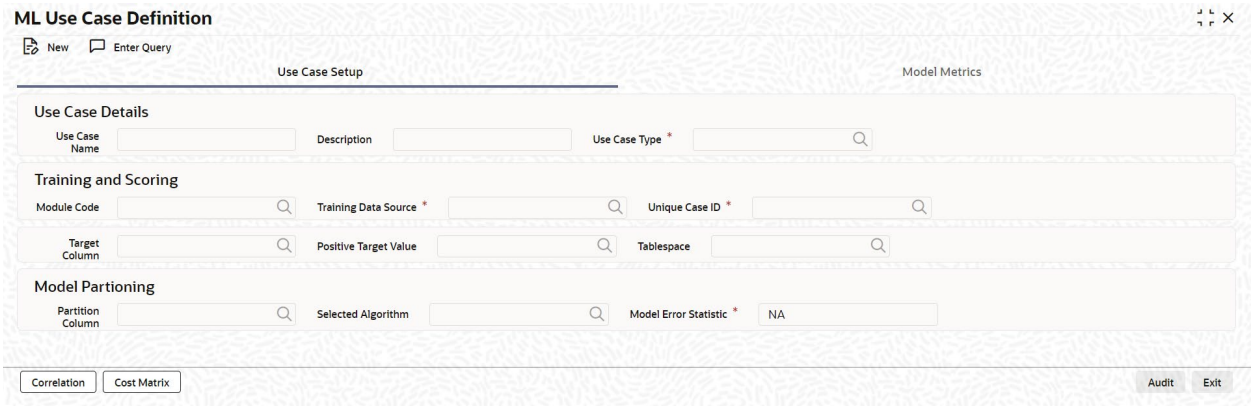
This is the first time Machine Learning is being setup for Oracle FLEXCUBE Universal Banking.

As part of this process, historical FLEXCUBE data will be referenced and the requisite data transformation routine will be called. The customer churn model is the only one that will be built. The customer lifetime value and segmentation do not have a persistent model object and get executed runtime.

3.2 ML Use Case Definition

Specify **User ID** and **Password** and login to the **Homescreen** of the application.

1. On **Homescreen**, type **STDUCDFN** in the text box, and click **Next**.
   - ➢ **ML Use Case Definition** screen displays.



2. On **ML Use Case Definition** screen, specify the details.

Use Case Name

Specify the name of the Use Case.

Description

Specify the Use Case description.

Use Case Type

Specify the different types of Algorithms:

- **REGRESSION**
- **CLASSIFICATION**

Module Code

Select the module code from the list of values.

Training Data Source

Select the data source for the Data Model Training.

Unique Case ID

Select the unique case Id from the list of values.

Target Column

Select the target column from the list of values.

Positive Target Value

Select the positive target column from the list of values. This field is enabled only when the Use Case Type is **CLASSIFICATION**.

Tablespace

Specify the name of the Table Space.

Partition Column

Select the partition column. A list of values has a list of columns from the Data Source other than the null columns. The system supports selecting more than one column and while saving, it has to be saved with comma separated.

Selected Algorithm

Select the algorithm names available in the list. This can be left blank to find the best algorithm by the system.

Model Error Statistic

Select the model error statistic from the drop-down list:

- **RMSE**
- **MAE**

This field is enabled only when Use Case Type is **REGRESSION**. The system defaults to **RMSE (Root Mean Square Error).**

3.2.1 Model Metrics Tab

The Model Metrics tab displays the results of the Trained Model.

1. On **ML Use Case Definition** screen, click the **Model Metrics** tab.
   - **Model Metrics** tab displays.



Model Partitions

Select the data source columns. The FULL MODEL is one of the values available in this list to select.

Metrics

The system displays the metrics values based on the Algorithm and Algorithm type.

Value

The system displays the computed values for each metric.

3.2.2 Correlation Button

The Correlation sub-system is used to do the Correlation Analysis.

1. On the **ML Use Case Definition** screen, click the **Correlation** button.
   - **Correlation Analysis** screen displays.



2. On the **Correlation Analysis** screen, specify the details.

Type of Correlation

Select the type of correlation from the drop-down list:

- **Pearson**
- **Spearman**
- **Kendall**

Threshold Value

Set the threshold value. The value has to be >0 and <1. The system defaulted value is 0.5.

Analyzed Feature

The system displays all the columns from the data source and one can move these to ignore columns one by one by analyzing all the columns displayed in the **Ignore Features**.

Note: The correlation is successful if the above step is successful, else the system displays an error message.

Ignore Features

The system displays the ignore features. **Ignore Features** stores the columns as comma-separated values. For Example:

If the **Ignore Features** has three values as follows:

- A
- B
- C

It should be sent as 'A, B, C'.

On specifying the **Type of Correlation** and **Threshold Value**, click the **Analyze** button.

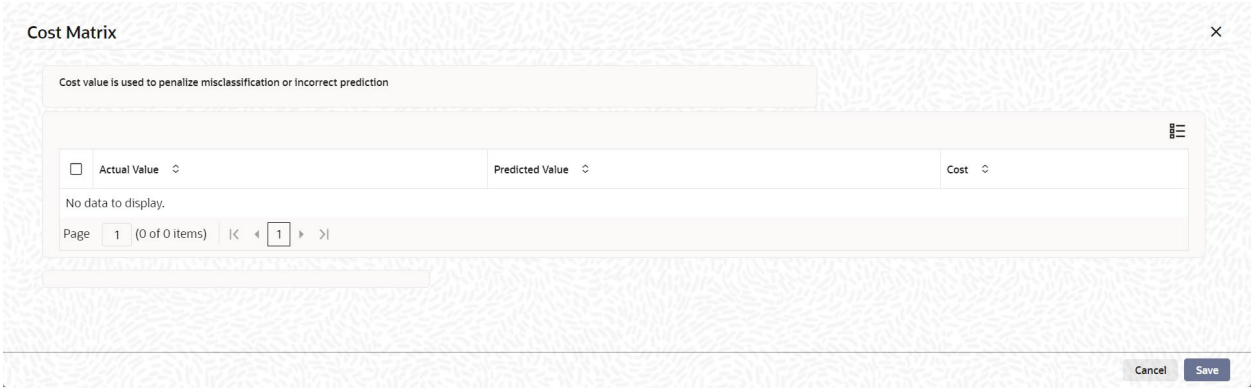
Feature 1, Feature 2 and Correlation Coefficient

The system displays the pairwise correlation frame **Feature 1**, **Feature 2**, and **Correlation Coefficient**.

3.2.3 Cost Matrix Button

This Cost Matrix sub-system is enabled only when the Use Case Type is selected as a **CLASSIFICATION**.

1. On the **ML Use Case Definition** screen, click the **Cost Matrix** button.
   - **Cost Matrix** screen displays.



2. On the Cost Matrix screen, maintain the following details.

Actual Value

The system displays the actual value.

Predicted Value

The system displays the predicted value.

Cost

The system displays the cost value.

3.3 ML Training and Scoring

Specify **User ID** and **Password** and login to the **Homescreen** of the application.

1. On **Homescreen**, type **STDTRSCR** in the text box, and click **Next**.
   - **ML Training and Scoring** screen displays.



2. On the **ML Training and Scoring** screen, specify the details.

Use Case Name

Specify the Use Case name. In this field, only Open and Authorized Use Case name is allowed to query.

Description

The system displays the description of the selected Use Case.

Use Case Type

The system displays the type of the selected Use Case.

Training Data Source

The system displays the training data source. The Training Data Source is the table name where the ML Data gets pooled from the production or projection schema.

Unique Case ID

The system displays the unique case Id.

Target Column

The system displays the target column.

Partition Column

The system displays the partition column.

Train Model

With the click of the **Train Model** button, the data gets trained and gets displayed in the **Model Training** tab for the selected Use Case Name.

Model Name

The system displays the ML Use Case model name.

Batch Scoring

On the click of the **Batch Scoring** button, the system displays the message to the user appropriately.